# Chapter 4
# DESCRIPTION OF THE INDUSTRY

The adoption of the increased pollution control measures required by CWA and RCRA requirements had a number of ancillary effects, one of which has been the formation and development of a waste treatment industry. Several factors have contributed to the growth of this industry. These include: (a) the manner in which manufacturing facilities have elected to comply with CWA and RCRA requirements; (b) EPA's distinction for regulatory purposes between on- and off-site treatment of wastewater in the CWA guidelines program; and © the RCRA 1992 used oil management requirements.

A manufacturing facility's options for managing wastes include on-site treatment or sending them off-site. Because a large number of operations (both large and small) have chosen to send their wastes off-site, specialized facilities have developed whose sole commercial operation is the handling of wastewater treatment residuals and industrial process by-products.

Many promulgated effluent guidelines also encouraged the creation of these central treatment centers. Inconsistent treatment of facilities which send their waste off-site to CWTs in the guidelines program has resulted in wastewater that is treated off-site being subject to inconsistent standards. EPA acknowledges that this may have created a loop-hole for dischargers to avoid treating their wastewater to standards comparable to categorical standards before discharge. Additionally, RCRA regulations, such as the 1992 used oil management requirements (40 CFR 279) significantly influenced the size and service provided by this industry.

## *INDUSTRY SIZE* *4.1*

Based upon responses to EPA's data gathering efforts, the Agency now estimates that there are approximately 205 centralized waste treatment facilities in 38 States. As shown below in Table 4-1, the major concentration of centralized waste treatment facilities is in EPA Regions 4, 5 and 6 due to the proximity of the industries generating the wastes undergoing treatment. At the time of the original proposal, EPA estimated there were 85 centralized waste treatment facilities in the United States. EPA, however, greatly underestimated the number of facilities in the proposed oily waste and recovery subcategory. Through additional data gathering activities (see discussion in Chapter 2), EPA obtained information on additional oils facilities. Except for facilities that were included or excluded because of scope changes/clarifications, all of the facilities which have been added since the original proposal treat and/or recover oily waste and/or used oil. EPA is aware that facilities in the metals and organics subcategories have entered or left the centralized waste treatment market also. This is expected in a service industry. Even so, EPA believes its initial estimate of facilities in the other subcategories is reasonable and no adjustments, other than those resulting from the redefined scope of the industry, have been made.

As detailed in Chapter 2, while EPA estimates there are 205 CWT facilities, EPA only has facility-specific information for 145 of these facilities. In preparing this reproposal, EPA conducted its analysis with the known facility specific information and then used the actual data to develop additional information to represent the

entire population. Unless otherwise stated, information presented in this document represents the entire population. Table 4-1 provides an example where data is only presented for the facilities for which EPA has facility-specific information.

## *GENERAL DESCRIPTION* *4.2*

Centralized waste treatment facilities do not fall into a single description and are as varied as the wastes they accept. Some treat wastes from a few generating facilities while others treat wastes from hundreds of generators. Some treat only certain types of waste while others accept many wastes. Some treat non-hazardous wastes exclusively while others treat hazardous and non-hazardous wastes. Some primarily treat concentrated wastes while others primarily treat more dilute wastes. For some, their primary business is the treatment of other company's wastes while, for others, centralized waste treatment is ancillary to their main business.

Centralized waste treatment facilities treat both hazardous and/or non-hazardous wastes. At the time of the original proposal, a few of the facilities in the industry database solely accepted wastes classified as non-hazardous under RCRA. The remaining facilities accepted either hazardous wastes only or a combination of hazardous and non-hazardous wastes. The vast majority of the newly identified oils facilities accept non-hazardous materials only. As such, EPA believes the market for centralized waste treatment of non-hazardous materials has increased during the 1990s.

EPA has detailed waste receipt information for the facilities in the 1991 Waste Treatment Industry Questionnaire data base. Of the 76 in-scope facilities from the proposal data base, 65 of them are RCRA-permitted treatment, storage, and disposal facilities (TSDFs). As such, most of these facilities were able to use information reported in the 1989 Biennial Hazardous Waste Report to classify the waste accepted for treatment by the appropriate Waste Form and RCRA codes. The Waste Form and RCRA codes reported by the questionnaire respondents are listed in Table 4-2 and Table 4-3, respectively. (Table 14-2 in Chapter 14 lists these Waste Form and RCRA codes along with their associated property and/or pollutants). Some questionnaire respondents, especially those that treat non-hazardous waste, did not report the Waste Form Code information due to the variety and complexity of their operations.

EPA does not have detailed RCRA code and waste code information on waste receipts for the facilities identified after the original proposal. It is known that the majority of these facilities accept non-hazardous wastes. Of the 69 post-proposal oily waste facilities for which EPA has specific data, only 19 are RCRA-permitted TSDFs.

Centralized waste treatment facilities service a variety of customers. A CWT generally receives a variety of wastes daily from dozens of customers. Some customers routinely generate a particular wastestream and are unable to provide effective on-site treatment of that particular wastestream. Some customers utilize CWTs because they generate wastestreams only sporadically (for example tank removal, tank cleaning and remediation wastes) and are unable to economically provide effective on-site treatment of these wastes. Others, many which are small businesses, utilize CWTs as their primary source of wastewater treatment.

Table 4-1. Geographic Distribution of CWT Facilities (145 Facilities)

| Region | State | # of CWTs | % of CWTs | Region | State | # of CWTs | % of CWTs |
|---|---|---|---|---|---|---|---|
| 1 | Connecticut | 5 | 5.5 | 5 | Illinois | 6 | 26.2 |
| | Maine | 1 | | | Indiana | 4 | |
| | Massachusetts | 1 | | | Michigan | 10 | |
| | Rhode Island | 1 | | | Minnesota | 2 | |
| 2 | New Jersey | 6 | 6.8 | | Ohio | 12 | |
| | New York | 4 | | | Wisconsin | 4 | |
| 3 | Delaware | 1 | 8.9 | 6 | Louisiana | 3 | 12.4 |
| | Maryland | 2 | | | Oklahoma | 2 | |
| | Pennsylvania | 6 | | | Texas | 13 | |
| | Virginia | 4 | | 7 | Iowa | 1 | 2.8 |
| 4 | Alabama | 3 | 17.9 | | Kansas | 2 | |
| | Florida | 8 | | | Missouri | 1 | |
| | Georgia | 3 | | 8 | Colorado | 2 | 2.1 |
| | Kentucky | 2 | | | Montana | 1 | |
| | Mississippi | 1 | | 9 | Arizona | 1 | 10.3 |
| | North Carolina | 1 | | | California | 12 | |
| | South Carolina | 2 | | | Hawaii | 1 | |
| | Tennessee | 6 | | | Nevada | 1 | |
| | | | | 10 | Oregon | 2 | 6.9 |
| | | | | | Washington | 8 | |

Table 4-2. Waste Form Codes Reported by CWT Facilities in 1989[1]

| Waste Form Codes | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| B001 | B106 | B112 | B119 | B206 | B219 | B310 | B501 | B507 | B515 | B604 |
| B101 | B107 | B113 | B201 | B207 | B305 | B312 | B502 | B508 | B518 | B605 |
| B102 | B108 | B114 | B202 | B208 | B306 | B313 | B504 | B510 | B519 | B607 |
| B103 | B109 | B115 | B203 | B209 | B307 | B315 | B505 | B511 | B601 | B608 |
| B104 | B110 | B116 | B204 | B210 | B308 | B316 | B506 | B513 | B603 | B609 |
| B105 | B111 | B117 | B205 | B211 | B309 | B319 | | | | |

[1]Table 14-2 in Chapter 14 lists Waste Form Codes and their associated properties.

Table 4-3. RCRA Codes Reported by Facilities in 1989[2]

| RCRA Codes | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| D001 | D012 | F009 | K016 | K063 | P020 | P069 | U002 | U052 | U118 | U161 |
| D002 | D017 | F010 | K031 | K064 | P022 | P071 | U003 | U054 | U122 | U162 |
| D003 | D035 | F011 | K035 | K086 | P028 | P074 | U008 | U057 | U125 | U188 |
| D004 | F001 | F012 | K044 | K093 | P029 | P078 | U009 | U069 | U134 | U190 |
| D005 | F002 | F019 | K045 | K094 | P030 | P087 | U012 | U080 | U135 | U205 |
| D006 | F003 | F039 | K048 | K098 | P040 | P089 | U013 | U092 | U139 | U210 |
| D007 | F004 | K001 | K049 | K103 | P044 | P098 | U019 | U098 | U140 | U213 |
| D008 | F005 | K011 | K050 | K104 | P048 | P104 | U020 | U105 | U150 | U220 |
| D009 | F006 | K013 | K051 | P011 | P050 | P106 | U031 | U106 | U151 | U226 |
| D010 | F007 | K014 | K052 | P012 | P063 | P121 | U044 | U107 | U154 | U228 |
| D011 | F008 | K015 | K061 | P013 | P064 | P123 | U045 | U113 | U159 | U239 |

[2]Table 14-2 in Chapter 14 lists Waste Form Codes and their associated properties.

Before a CWT accepts a waste for treatment, the waste generally undergoes rigorous screening for compatibility with other wastes being treated at the facility. Waste generators initially furnish the treatment facility with a sample of the waste stream to be treated. The sample is analyzed to characterize the level of pollutants in the sample and bench-scale treatability tests are performed to determine what treatment is necessary to treat the waste stream. After all analyses and tests are performed, the treatment facility determines the cost for treating the waste stream. If the waste generator accepts the cost of treatment, shipments of the waste stream to the treatment facility will begin. Generally, for each truck load of waste received for treatment, the treatment facility collects a sample from the shipment and analyzes the sample to determine if it is similar to the initial sample tested. If the sample is similar, the shipment of waste will be treated. If the sample is not similar but falls within an allowable range as determined by the treatment facility, the treatment facility will reevaluate the estimated cost of treatment for the shipment. Then, the waste generator decides if the waste will remain at the treatment facility for treatment. If the sample is not similar and does not fall within an allowable range, the treatment facility will decline the shipment for treatment.

Treatment facilities and waste generators complete extensive amounts of paperwork during the waste acceptance process. Most of the paperwork is required by Federal, State, and local regulations. The amount of paperwork necessary for accepting a waste stream emphasizes the difficulty of operating centralized waste treatment facilities.

## *WATER USE AND SOURCES OF WASTEWATER* *4.3*

Approximately 1.9 billion gallons of wastewater are generated annually at CWT facilities. It is difficult to determine the quantity of wastes attributable to different sources because facilities generally mix the wastewater prior to treatment. EPA has, as a general matter, however, identified the sources described below as contributing to wastewater discharges at CWT operations that would be subject to the proposed effluent limitations and standards.

*Waste Receipts*. Most off-site waste received by CWT facilities is aqueous. These aqueous off-site waste receipts comprise the largest portion of the wastewater treated at CWTs. Typical waste receipts for the metals subcategory include but are not limited to: spent electroplating baths and sludges; spent anodizing solutions; metal finishing rinse water and sludges; and chromate wastes. Types of waste accepted for treatment in the oils subcategory include but are not limited to: lubricants, used petroleum products, used oils, oil spill clean-up, bilge water, tank clean out, off-specification fuels, and underground storage tank remediation waste. Types of wastes accepted for treatment in the organics subcategory include, but are not limited to: landfill leachate; groundwater clean-up; solvent-bearing waste; off-specification organic products; still bottoms; used antifreeze; and wastewater from chemical product operations and paint washes.

*Solubilization Water*. A portion of the off-site waste receipts is in a solid form. Water may be added to the waste to render it treatable.

*Waste Oil Emulsion-Breaking Wastewater*. The wastewater generated as a result of the emulsion breaking or gravity separation process from the processing of used oil constitutes a major portion of the wastewater treated at oils facilities. EPA estimates that, at a typical oils facility, half of the wastewater treated is a result of oil/water separation processes.

*Tanker Truck/Drum/Roll-Off Box Washes*. Water is used to clean the equipment used for transporting wastes. The amount of wastewater generated was difficult to assess because the wash water is normally added to the wastes or used as solubilization water.

*Equipment Washes.* Water is used to clean waste treatment equipment during unit shut downs or in between batches of waste.

*Air Pollution Control Scrubber Blow-Down*. Water or acidic or basic solution is used in air emission control scrubbers to control fumes from treatment tanks, storage tanks, and other treatment equipment.

*Laboratory-Derived Wastewater*. Water is used in on-site laboratories which characterize incoming waste streams and monitor on-site treatment performance.

*Industrial Waste Combustor or Landfill Wastewater from On-Site Landfills.* Wastewater is generated at some CWT facilities as a result of on-site landfilling or incineration activities.

*Contaminated Stormwater*. This is stormwater which comes in direct contact with the waste or waste handling and treatment areas. If this contaminated CWT stormwater is introduced to the treatment system, its discharge is subject to the proposed limitations. The Agency is proposing not to regulate under the CWT guideline non-contact stormwater or contaminated stormwater not introduced to the treatment system. Such flows may, in certain circumstances, require permitting under EPA's existing permitting program under 40 CFR 122.26(b)(14) and 40 CFR 403. CWTs that introduce non-contaminated stormwater into their treatment system will need to identify this as a source of non-CWT wastewater in their treatment system in their permit applications. This is necessary in order that the permit writer may take account of these flows in developing permit limitations that reflect actual treatment.

### *VOLUME BY TYPE OF DISCHARGE* *4.4*

In general, three basic options are available for disposal of wastewater treatment effluent: direct, indirect, and zero (or alternative) discharge. Some facilities utilize more than one option (for example. a portion of their wastewater is discharged to a surface water and a portion is evaporated). Direct dischargers are facilities which discharge effluent directly to a surface water. Indirect dischargers are facilities which discharge effluent to a publicly-owned treatment works (POTW). Zero or alternative dischargers do not generate a wastewater or do not discharge to a surface water or POTW. The types of zero or alternative discharge identified in the CWT industry are underground injection control (UIC), off-site transfer for further treatment or disposal, evaporation, and no wastewater generation. Table 4-4 lists the number of facilities utilizing each discharge option.

Average facility wastewater discharge information is presented in Table 4-5 for the indirect and direct discharge options. The proposed effluent limitations guidelines and standards for the CWT industry do not apply to facilities with a zero or alternative discharge.

Table 4-4 Facility Discharge Options

| Discharge Option | No. of Facilities with Specific Data | No. of Scaled-Up Facilities |
|---|---|---|
| Direct | 12 | 14 |
| Indirect | 101 | 144 |
| Indirect and off-site transfer | 1 | 1 |
| Indirect and no wastewater generation | 2 | 2 |
| UIC | 7 | 9 |
| Off-site transfer | 14 | 22 |
| Evaporation | 3 | 5 |
| Off-site transfer and evaporation | 1 | 1 |
| Zero (not specified) | 4 | 7 |
| Total | 145 | 205 |

Table 4-5 Quantity of Wastewater Discharged (205 Facilities)

| Discharge Option | Quantity of Wastewater Discharged (Million gallons/year) | | | |
|---|---|---|---|---|
| | Total | Average | Minimum | Maximum |
| Direct | 535 | 38.2 | 0.078 | 225 |
| Indirect | 1,370 | 9.3 | 0.0013 | 177 |

### *OFF-SITE TREATMENT INCENTIVES AND COMPARABLE TREATMENT* *4.5*

As noted before, the adoption of the increased pollution control measures required by the CWA and RCRA regulation was a significant factor in the formation and development of the centralized waste treatment industry. Major contributors to the growth of this industry include EPA decisions about how to structure its CWA effluent limitations guidelines program as well as the manner in which manufacturing facilities have elected to comply with CWA and RCRA requirements.

The CWA requires the establishment of limitations and standards for categories of point sources that discharge into surface waters or introduce pollutants into publicly owned treatment works. At present, facilities that do not discharge wastewater (or introduce pollutants to POTWs) may not be subject to the requirements of 40 CFR Subchapter N Parts 400 to 471. Such facilities include manufacturing or service facilities that generate no process wastewater, facilities that recycle all contaminated waters, and facilities that use some kind of alternative disposal technology or practice (for example, deep well injection, incineration, evaporation, surface impoundment, land application, and transfer to a centralized waste treatment facility).

Thus, for example, in implementing CWA and RCRA requirements in the electroplating industry, many facilities made process modifications to conserve and recycle process wastewater, to extend the lives of plating baths, and to minimize the generation of wastewater treatment sludges. As the volumes of wastewater were reduced, it became economically attractive to transfer electroplating metal-bearing wastewater to off-site centralized waste treatment facilities for treatment or metals recovery rather

than to invest in on-site treatment systems. In the case of the organic chemicals, plastics, and synthetic fibers (OCPSF) industry, many facilities transferred selected process residuals and small volumes of process wastewater to off-site centralized waste treatment facilities. When estimating the engineering costs for the OCPSF industry to comply with the OCPSF regulation, the Agency assumed, based on economies of scale, in the case of facilities with wastewater flows less than 500 gallons per day, such plants would use off-site rather than on-site wastewater treatment.

The Agency believes that any wastes transferred to an off-site CWT facility should be treated to at least the same level as required for the same wastes if treated on-site at the manufacturing facility. In the absence of appropriate regulations to ensure at least comparable or adequate treatment, the CWT facility may inadvertently offer an economic incentive for increasing the pollutant load to the environment. One of the Agency's primary concerns is the potential for a discharger to reduce its wastewater pollutant concentrations through dilution rather than through appropriate treatment. This proposal is designed to ensure that wastes transferred to centralized waste treatment facilities would be treated to the same levels as on-site treatment or to adequate levels.

This is illustrated by the information the Agency obtained during the data gathering activities for the 1995 proposal. EPA visited 27 centralized waste treatment facilities in an effort to identify well-designed, well-operated candidate treatment systems for sampling. Two of the principal criteria for selecting plants for sampling were based on whether the plant applied waste management practices that increased the effectiveness of the treatment system and whether the treatment system was effective in removing pollutants. This effort was complicated by the level of dilution and co-dilution of one type of waste with another. For example, many facilities treated metal-bearing and oily wastes in the same treatment system and many facilities mixed non-CWT wastewater with CWT wastewater. Mixing metal-bearing with non-metal-bearing oily wastewater and mixing CWT with non-CWT wastewater provides a dilution effect which generally reduces the efficiency of the wastewater treatment system. Of the 27 plants visited, many were not sampled because of the problems of assessing CWT treatment efficiencies due to dilution of one type of wastewater with another.

This proposal would ensure, to the extent possible, that metal-bearing wastes are treated with metals control technology, that oily wastes are treated with oils control technology, and that organic wastes are treated with organics control technology.

In developing this proposal, EPA identified a wide variation in the size of CWT facilities and the level of treatment provided by these facilities. Often, pollutant removals were poor, and, in some cases, significantly lower than would have been required had the wastewaters been treated at the site where generated. In particular, EPA's survey indicated that some facilities were employing only the most basic pollution control equipment and, as a result, achieved low pollutant removals relative to that easily obtained through the use of other, readily available pollutant control technology. Further, as explained below, EPA had difficulty in identifying more than a handful of facilities throughout the CWT industry that were achieving optimal removals.

During consideration of this proposal, EPA looked at whether it should limit the scope of national regulation to facilities above a certain size or flow level because of information before the Agency suggesting, that, in the case of certain smaller facilities, the costs of additional controls would represent a significant increase in their costs of operation. For the reasons explained

above, however, EPA has decided not to limit the scope of this proposal, based either on the size of a facility or the volume of wastewater flows. The effect of such an approach, given the structure of the industry and treatment level currently observed, would be effectively to encourage the movement of wastewater to some of the very facilities that are not providing treatment that is equivalent to that which would be expected (and required) if the wastewater were treated at the point of origin. Since this proposal would ensure adequate controls for wastewater discharges from CWT facilities that accept waste and wastewater that would otherwise be controlled by other guidelines, all members of the CWT industry should comply with the national CWT standards regardless of size or potential economic impacts.